BF
1999
.P455
AUX
STOR
1

# QUANTA of EVOLUTION

by

HENRI HINOKO

572.8
H334q

THE LIBRARY
BRIGHAM YOUNG UNIVERSITY
PROVO, UTAH

THORNTON & SON,
Booksellers,
11 The Broad,
Oxford.

BF
1999
.A42x

# Quanta of Evolution

## Being a Sequel to "Racial Old-Age"

by Henri Hinoko

"Bene vixit qui bene latuit."
(He lives well who lives widely.)
-- FRANCIS BACON

**Published by the author at**

**61 Battery Street, Seattle, Wash.**

**Price 50¢**

Copyright, 1928,
by Henry Allen

THE LIBRARY
BRIGHAM YOUNG UNIVERSITY
PROVO, UTAH

# PREFACE

At the time the Snyder Murder Trial was raging in the United States in 1927, I spent $30 in postage alone, trying to get publicity for a new law that I had worked out, governing the distance of the planets from the Sun and also of the satellites from their planets. Having a carefully developed system of theory to back this law with evidence ample enough to establish at least the necessity of its careful consideration, I was disappointed in not having the opportunity to explain matters more in detail.

The failure of my discovery to obtain even consideration led me to work out a new theory of racial old-age in which I advanced original arguments as to the causes as well as pointed out the recognition factors of that condition. This, too, was another failure, altho I gained some recognition from a few scholars of the highest standing like Prof. Franklin H. Giddings. This last failure was probably made the more certain in that I was so incautious as to suggest that the Japanese might have more worth than ourselves.

It seems scarcely worth while for a man of original ideas to waste his time trying to teach Americans how to live better lives for, as Livy said of the ancient Romans, "In our times we can neither endure our faults nor the means of correcting them." Consequently I am turning to the Japanese who have impressed me as possessing more real ability, capacity and willingness to learn new truth than any other nation on Earth. In fact this virtue of the Japanese has led to what I consider their greatest fault, namely, a too great admiration for western civilization and culture.

Four years ago I started to study the Japanese language in which I have made considerable progress. Using Japanese stem words, I have constructed a name for myself that will be more acceptable to Japanese tongues than my English name with its 'l' sound. A Japanese gentleman in Seattle assures me that the name is quite common in Japan and entirely appropriate if I care to use it - and I do care to use it because its symbolism appeals to me.

If I am correct in my theory of racial old-age, the Japanese are probably the chief beneficiaries. My first choice would be, naturally, for my own people to benefit the most but, if the western nations are destined to be the latest victims of civilization, then I wish the Japanese luck, hoping that they may be the first race to conquer civilization rather than to be conquered by it as has been the fate of all former great races.

The men of my family have died on the field of battle in every war America ever had. Twice have I myself worn the uniform of the national government, once before I was of the draft age and once after. The natural affection that I have for America under such circumstances does not, however, blind me to the great and glaring faults of her civilization. I would, if I could, change the destiny of America from that of certain defeat. Failing in that most earnest wish, then I hope that the evils even now overtaking America may at least furnish an object lesson from which the Japanese may profit that in the end the race of man may not follow that of the dinosaurs.

# TABLE OF CONTENTS


| | | |
|---|---|---|
| | Foreword | 2 |
| I. | Introduction | 3 |
| II. | Seven Tests of Racial Old-Age | 5 |
| III. | Heredity | 11 |
| IV. | The Conditioning Factors of Life | 15 |
| V. | Gravitation and Ice Ages | 16 |
| VI. | Conditions of Life in a Glacial Epoch | 19 |
| VII. | In Retrospect | 22 |
| | Afterword | 25 |

# FOREWORD

My previous book "Racial Old-Age" (Seattle, 1927) and the present volume are complementary. Separately each work is somewhat deficient but, if I waited until my material was fully and properly organized, I would probably never publish anything. The subject is so large and so important that I have been hoping for contributions from others along this line. If my thesis be correct there can scarcely be too much speed in working out the details.

"Racial Old-Age" is now out of print. I gave away 495 copies and sold one. That was intended to be a personal contribution towards creating a better civilization. My subject bristles with unavoidable personal biases at every angle – biases on the part of the reader both for and against but mostly the latter. I hope a considerable number of my readers will at least make an effort to take of the subject matter a detached view – an attitude of mind not very common in America.

# I. INTRODUCTION

Man, with his propensity for taking things apart to see what they are made of, is ever separating subjects for investigation that rightly can be understood only as a whole. So it is with evolution when we attempt to consider it first with reference to the so-called internal factors and then again with reference to the external. In my book "Racial Old-Age" I presented a new viewpoint of the self-regarding elements or the internal factors of evolution and now it is necessary to give a brief resume of that subject as well as to develope some additional points in order to give the proper background for understanding the discussion of environment or the external factors of evolution, which follows later.

The concept of racial old-age is not an original one with the author as it is a perfectly familar one to the biologists in respect to living animals and to the paleontologists in respect to extinct species. In a different form the same matter has been presented by the social scientists under such headings as racial decay or decadence. Dr. Oswald Spengler's "The Decline of the West" is a noteworthy treatment of the subject from a historical point of view. Taking the unorganized facts of biology, paleontology and sociology I have merely applied a new test or viewpoint consisting of a reversal of Haeckel's famous Law of Biogenesis according to which ontogeny repeats phylogeny. Reversing this law, we have the new test that phylogeny repeats ontogeny, or in other words the race as it grows old repeats the indications of senility to be found in the individual as he grows old.

A volume might be written on the Law of Biogenesis and its subsequent interpretations. G. Stanly Hall and his followers, adopting the Theory of Recapitulation, gave special emphasis to the history of child development and of adolescence as repeating or recapitulating in an abbreviated form the earlier history of its race. Thorndike has urged a Theory of Utility which attributes both developments of the race and of the individual to the same causes rather than holding that there is a direct connection between them. Prof.

John Dewey and his school have presented a Theory of Correspondence which maintains that the two processes of growth or development are closely related. Dewey's theory and that underlying Spengler's philosophy of civilization bear a strong resemblance to each other. It has been urged that the Theory of Correspondence is the safest of the three mentioned in that it does not imply too much, yet no one of the three gives an adequate explanation of causes.

The important fact is that the biologists with scarce an exception regard the Law of Biogenesis as an indisputable fact. For similar reasons, i. e. the empirical facts of observation, I consider the reverse to be true. Certainly one is no more remarkable than the other. Let us assume for the moment not only that the original Law of Biogenesis is perfectly correct but that the individual does invariably repeat the history of his race up to the day of his death – there was no age limit in the original law. If that be true for all individuals of the race then the reverse must equally be true that the race repeats the history of the individual up to the day of its death or final extinction. It is a good deal like the mathematical proposition, if **a** is equal to **b**, then **b** is equal to **a**. This Theory of Equal Balance, as we might call it, is merely a difference of viewpoint.

If there were never any difference or variation in which one process repeated the other, the matter would be quite simple, indeed, and one viewpoint as valuable as the other. But any variation or many of them may greatly complicate the matter whether these variations begin the germ plasm or late in the life development of the individual. In any case the original Law of Biogenesis is conditioned in its operation by the number, the extent and the direction of these variations. Likewise the reverse of the of the original law must also be conditioned.

It is not my intention to introduce a lot of new involutions of thought in connection with this subject but I do insist upon the probability of the reverse of the original law holding as well. I have already pointed out in my "Racial Old-Age" that there

are indisputably a large number of facts pointing to that conclusion. And after all it is merely another illustration of the principle of balance in human thought. For instance, we think by opposites in a thousand different ways; we use induction and we use deduction; we match good with evil; we generalize or we specialize; and so on endlessly. So why should either view be excluded? It is merely a new recognition of the validity of the ancient doctrine of Empedocles (c.490-430 B. C.) in which he recognized two generating powers as in love and hate, in affinity and antipathy and in attraction and repulsion.

The important thing is from which viewpoint we can see the most or is it necessary to use both. Certainly those who grasp the central thought of my concept of racial old-age must realize the value of the telic policy involved therein provided the concept be true, provided its truth be made known, and provided the race has not gone so far in the direction of senile stupidity as to be unable to act upon it. It fills that need – as urged by Prof. Franklin H. Giddings long ago – of a "firm basis in social psychology on which to build," a social psychology that may, under the leadership of our sociologists, be created into a compelling social force.

## II. Seven Tests of Racial Old-Age

Again we come to the balanced principle of thought in devising tests by which we may recognize racial old-age. We may conceive of racial youthfulness as the avoidance of certain extremes, the following, so to speak, of the golden mean of Aristotle or of the middle path of Gotama. That is the viewpoint of the first six tests, but in each case the deciding factor is the empirical test of observation as to the course followed by the individual in his process of growing old. Under different conditions and within limits each extreme is conceived of as holding true in the aging process of both race and individual.

Before considering these tests separately there is a collective aspect that should be noted. It follows,

of course, that, if a race or individual is youthful, it has the capacity of varying in the different directions indicated by the different tests. Hence a lack of capacity for variation is to be taken as a sign of senescence. It, in fact, is recognized by students of biology as an indication that a specie of plants or of animals, lacking variability, is near the end of its line.

**SIZE.** In the test of size we have the undesirable extremes of oversize and undersize. Biologists and paleontologists have both urged oversize as a danger factor in evolution. In the human species giantism and drawfism are both recognized as pathological conditions. But mankind in general seem to be obsessed with an admiration for mere size. They want everything big - even their books. The attitude is irrational in view of the facts of extinct giant species. Even among extinct races of men, large individuals are common. Dr. Chares B. Davenport in his study of the "Inheritance of Stature" found that the offspring of tall parents regressed less towards mediocrity than those of short parents. This is fully in harmony with the contention of "Racial Old-Age" that the human race is threatened more by oversize than by undersize, when the matter is viewed in the light of variability.

**OUT-SKIN-GROWTHS.** By out-skin-growths it is intended to include all forms of outgrowths, whether normal or abnormal, arising in the layers of the skin. These include: scales, feathers, hair, teeth (modified scales), hollow horns, "hairy" horns, beaks, nails, claws, hoofs, etc. In respect to man the teeth, the hair, the nails and certain abnormal outgrowths are applicable. There are no excess of teeth in man as represented in the immense tusks of some animals nor a complete deficiency as in birds, but unfortunately bad teeth are common among the civilized races. The Chinese sometimes have an excess of finger nails. Many individuals have abnormalities such as corns, bunions, callosities and tumors.

In respect to man's hair we have distinct tendencies to both extremes of hairlessness and hairiness. It is useless to urge, however, that bald-heads are

stigmata of racial old-age until we can form some sort of an idea of the utility of hair on the heads and of beards on men's faces. It has been the style for some time to consider these patches of hair as merely adornments brought into existence by sexual selection. Any sociologist ought to have his doubts on this latter point, but nevertheless bald-headed Arthur Brisbane, like the tailless fox in the fable, has been urging for years in editorials through the Hearst press of America that everyone else should be bald too. According to my personal acquaintance with the bald pates he has been secretly aided and abetted by practically every bald-headed person in America in his campaign against the rest of us. That is all right but are bald heads such a wonderful improvment? No one has any evidence. They just hope it's so. It is a compensation for their inferiority complex in that direction.

A new explanation of our beards and hair on our heads was offered in "Racial Old-Age," namely, that it affords ingress for the atmospheric electricity to the motor centres of the body. This may appear fantastic to those who have little knowledge of physics and none at all of biochemistry. From the standpoint of physics the effect of hair on the body instead of a smooth skin in introducing an increased flow of electricity from the air into the body is incontrovertible. Add to this that the body is composed of elements having a special electrical significance and you have a situation demanding consideration. If you would go further in considering the body cells and the body as a whole as electrical machines you should read Dr. George W. Crile's scholarly work on the subject, "A Bipolar Theory of Living Processes" (1926).

I have already pointed out the constitutional weakness of hairless mammals, using the hairless Mexican dog as an example. To that we may add a breed of delicate hairless cats, known to have lived formerly in New Mexico but now believed to be extinct. In connection with man it is significant that men with hairy forearms, legs and breast are popularly supposed to be of a quick, nervous, active type. It is not a type common among weaklings.

**MATERIALISM.** The third test includes under the heading of materialism all those developments of the individual and race implying a too exclusive concern with their own immediate needs. It includes overemphasis of offensive and defensive arrangements, varying in the social arrangements of man from militarism to pacifism. On the economic side the emphasis upon material values is universal among both men and animals, and yet among men instances are not entirely lacking of the other extreme, i. e. an insufficient attention to the individual's own needs.

**SPECIALIZATION.** Many times it has been pointed out by biologists of the highest standing, such as Julian S. Huxley, that "specialization closes the door to progress." Sociologists seem to be dimly aware that something is wrong with specialization. Dr. Cecil C. North has written an excellent book on "Social Differentiation" (Chapel Hill, N. C., 1926) in which he points out some of the evils of specialization but he fails to include in his discussion the wonderfully rich material of biology and paleontology that would have clinched his argument. It yet remains for a really authoritative discussion of the subject from the standpoint of the geniuses of the race, showing them to be quite commonly men of extraordinary wide interests.

Overspecialization and underspecialization are concomitant. The former begats the latter. An overemphasis of one function, whether physical or mental, means the neglect of another. Civilization always has meant an increase of specialization and with it decadence and a loss of sensitiveness, making the group blind to its own decay and its cause. Physical defects may generally be grouped under a loss or underspecialization. Man is more generalized than any of the animals and has more multiplicity of interests and of activities, – it is that which has made him man – and yet he follows the course of the losers in the race of evolution. Even as they surrendered for temporary gains he still does the same.

**COLOR.** Up to this point I have discussed the tests of racial old-age covered in my previous book much more fully and perhaps more clearly. The present

test of color and the next one of reproduction are entirely new in connection with the subject. The two undesirable extremes of color are albinism and melanism. Certain forms of both are known to be pathological. Albinism has been recognized by Haeckel, Darwin and others as implying a constitutional weakness. For instance, white cats with blue eyes are practically always deaf and white horses are especially susceptible to sarcomatous tumors. Even human albinos are deficient in sight and hearing.

As to skin color, the lower races of men are strongly pigmented while the higher races, including Europeans, Northern Mongolians and Japanese, are generally intermediate in skin color. Excessive blondness, such types as are common among Finns, Swedes and Saxons, are to be regarded as having gone too far in that direction. Indeed, precocious children, who intellectually have grown old before their time, may commonly be recognized by their excessive blondness, consisting of a clear pink skin and bright yellow hair. It is doubtful whether the very light blondes ever produce first-rate men. My own personal observations lead me to the conclusion that they do not even produce a high average type among the Europeans. As to hair color the darker browns and reds of the Europeans are near the desirable mean, other races having for the most part very dark or black hair.

Applying the test of the individual to the race, we find that, as they grow old, individuals acquire more pigmentation in their skin while their hair loses it, suggesting that both extremes of color may be a test of racial old-age.

**REPRODUCTION.** Recent reports show a considerable increase of multiple births in the United States and some optimistic editors have suggested that if we continue to make improvement in that direction, mothers might be able to have all their babies at one time and then be done with it for the rest of their lives. A study of conditions in the descending scale of life suggests quite different conclusions. The lower we go in the animal world the greater the profusion in the reproduction of the species. Hence the test is proposed that no-births and multiple-births

are the marks of racial old-age while single-births are the desirable mean.

Looked at from a different angle, we may also regard excessively large or small families as unfavorable signs, the one marking the family for early extinction and the other for ultimate extinction. Excessive reproduction, even in the human specie, is faintly reminiscent of the aged apple tree in its excessive prolificacy of blossom and of inferior fruit a year or two before its death. It is worth while noting in connection with the size of families how Galton pointed out the usual fate of extinction that overtook many fine English families where the male heirs of the families married the sole heiresses of other families. Some families escaped extinction, according to Galton, because the husband outlived his heiress-wife long enough to remarry and raise a family.

**MONO-SEXUALITY.** I scarcely expect much recognition for my doctrine of racial old-age in America on account of my interpretation of feminism. Indeed, I may be fortunate in my own person that it should be that way. Unmistakably America has a feminist civilization in which the major emphasis is put on the woman half of the race.

To understand the concept of racial old-age we must submit each test to the individual of the race in order to determine the result as to the race. Making this application, we find our doctrine of the golden mean breaks down and one of those curious reversals of conditions, so familar to the student of biology, takes place. We find that in the matter of sexuality each sex contains some of the elements of the other sex and, when the sexes grow older, they tend to approximate towards each other even more. This condition is generally recognized by medical men and by students of genetics as an undeniable fact. It is urged that old decaying races progress towards this approximation of the sexes, known as feminism, and, if the history of the past is any criterion for an accurate judgment, the case may be considered as proved as to the resulting effect on the future of the race.

# III. HEREDITY

The concept of racial old-age clearly implies that it is fundamentally a matter of inheritance. More than that it implies an inheritance of acquired characteristics. On this point many modern cytologists, geneticists and zoologists have conspired to put the followers of Lamarck in the limbo. Amid the amazing conflicts of their cross opinions with those of the Neo-Lamarckians only one thought emerges clear and that is in the matter of heredity you believe what you want to believe. Amid the indignant denials of worthy scholars let me illustrate. Weismann, who conducted the first great concerted attack against the Lamarckians, made the starting point of his system of thought in the fact that he could not understand the possibility of any mechanism by which acquired characteristics in the individual could register themselves in the germ cell. Unwilling to admit that here was a problem beyond his comprehension, Weismann proceded to cut off the tails of many rats, thereby proving among other things that he did not understand the the position of the Lamarckians. His other conclusions followed as a matter of course, including his famous doctrine of the continuity of the germ plasm. So you see how it is, understanding heredity depends on whether you are a determinist or a libertarian, on the amount of your self-conceit as well as on your ability to take a detached view of matters most certain to possess a personal bias in respect to yourself. No less an authority than Prof. J. Arthur Thompson has pointed out the fatalistic implications of the Weismannian interpretatcn of heredity.

My own views are frankly influenced by conceptions taken bodily from the field of physics. The important idea is that every body from the smallest to the largest has its own fundamental vibration period. It may have several vibration periods but one of these is fundamental, thereby introducing the Principle of Selectivity according to which the body will respond most readily to outside forces involving its own fundamental vibration period. Now a germ cell is

composed of physical matter and energies the same as any other body and therefore must be subject to the same laws. It must respond to any force involving its fundamental "wave length" or vibration period. If the chromosome material of the germ cell, upon which both cytology and genetics have centred the mechanism of heredity, be composed of a plastic substance to register the various vibrations, we have a fairly satisfactory explanation of how acquired characteristics may be transferred and the Principle of Selectivity accounts for the varying degrees of this transference. Unless there is a frank preference for a mystical explanation, biologists can not refuse the teachings of modern physics.

Let us take the doctrine of the continuity of the germ cell from the viewpoint of up-to-date physics. We know at once that the germ cell must be in a state of constant change unless we introduce a new principle outside the realm of physics. Even atoms - we know nowadays - are not permanent. They are just relatively stable in form, that is all. So with the germ cell, its continuity amounts to only a relative stability and that decidedly less than that possessed by the atoms. This may sound like an explanation of heredity more mechanistic than that of the Weismannians and so it is up to a certain point. Beyond that the way lies open for free will and social choices. This much is certain, we can not afford to surrender these latter social values because Weismann could not conceive of an explanation for certain mysteries of heredity nor can we accept the substitution of one mystery for another as a complete explanation. Despite the asserticns of its defenders that the continuity of the germ cell is a firm foundation stone of modern genetics, there is nothing firm about it and never will be until much more is explained. The saving clauses added by most explainers regarding the position of the Neo-Lamarckians is sufficient proof of the weakness of their school. Dr. Paul Kammerer as well as others have made too many original experiments, tending to prove the inheritance of acquired characteristics, to leave a clear field to those who want to believe that the germ plasm remains

unchanged from generation to generation except for germinal variations brought about by recombination of different unit characters of the intermingling lines of descent.

Recently some scholars claim to have found the Mutation Theory of De Vries unsound. They have discovered, so they say, that the evening primrose (Oenothera Lamarckiana),upon which De Vries based his conclusions, really was a plant with a multiple inheritance of characters and that the so-called mutations were merely a segregation of these characters in the offspring. Call it what you like, all you have to do is to assume that the evening primrose possessed these characters from the beginning and the argument of De Vries' opponents becomes unsound. They have no proof of their assumption that the plant is a hybrid. In fact wild primroses have since been found having characters similar to those of the cultivated plant. We may agree with T. H. Morgan who, as a result of studying mutations of the fruit fly (Drosophila melanogaster), considered this process of change the raw material of evolution. Again I call your attention to physics and its Quantum Theory which theory may be identified as one and the same with the Mutation Theory of biology. The reasons for neither have never been satisfactorily explained tho I propose to explain its application in physics in the near future. In the mean time I make the suggestion that the Quantum Theory is of universal application not only in all forms of energy and of matter but in all living processes as well, thereby enunciating an unification of principles in complete harmony with the tendencies of modern physics and of science in general.

Before dismissing the subject of heredity let us notice a few points bearing on my concept of racial old-age. A German scholar, E. Zederbauer, tells us that the Mendelian ratio "can not be depended upon to such an extent as assumed up to now, because the quota of segregation depends to a great extent on the age and the difference in the ages of the parental plants." (See page 311 in Dr. Paul Kammerer's "The Inheritance of Acquired Characteristics," New York, 1924.) If this be true it clearly establishes the probability of the main contention of racial old-age.

A second point concerns the amount of racial old-age shown by the different birth-ranks in families. Pearson and his co-workers have found that the older birth-ranks enjoyed an average longer life than the younger birth-ranks. They, too, found evidence of a higher variability in the eldest birth-rank than in the youngest. The investigations of Galton, Yoder, Ellis, Gini, Redfield and Huntington have shown that among men of genius and of eminence first honors go to the first-born of their families. This is quite in accord with the expectations of "Racial Old-Age" but an anomaly arises in that second honors go not to the intermediate birth-ranks but to the youngest. The only satisfactory explanation is that which has already been offered, namely, there may be an inheritance of the greater mental ability of the more mature father and this may be so great in the case of the youngest child as to compensate it for an inferior, i. e. older, physical inheritance.

Certain particular stigmata of racial old-age will probably be found to exist more frequently in connection with the youngest birth-ranks. One of these is that of Mongolian idiocy. A recent investigation by George Ordahl (see Journal of Heredity, October, 1927) confirms previous findings that this class of idiots undoubtedly is characteristic of the youngest birth-rank of its family. 60% of those investigated by Ordahl were last-born, a percentage so high that it establishes an unmistakable inference of the influence of age. From personal observations I fully expect to see established comparable figures for bald-headedness among the younger birth-ranks.

A final illustration of the handicaps of the younger birth-ranks is an example from Dr. W. C. Sullivan's book on "Alcoholism" (London, 1906), cited on page 246 by C. W. Saleeby in his book "Parenthood and Race Culture – An Outline of Eugenics" (New York, 1910) as a typical alcoholic family. Quoting Dr. Sullivan, he says: "the first three children were healthy, the fourth was of defective intelligence, the fifth was an epileptic idiot, the sixth was dead-born and finally the productive career ended with an abortion." Alcoholism has long been associated with

the inheritance of defective intelligence and, if the case cited is typical as to its birth-ranks, it is a strong proof of the age factor in the inheritance of acquired characteristics.

Before passing to the discussion of the external factors of evolution let me remind the reader that the inheritance of family or racial characteristics, and of acquired characteristics or of body changes due to change of habits or to environmental causes are all on the same physical basis. And if the reader insists that living processes have nothing to do with physics – oh well, you believe what you want to believe.

## IV. The Conditioning Factors of Life

Life to exist must continually draw upon the energies of Nature for sustenance. Not all of these energies are of equal worth to the living processes and, while much is known regarding some of the more common factors, our knowledge is far from complete even in respect to these. For convenience we may classify the various forms of known energies according to their mode of ingress into the body. First there is the alimentary intake, consisting of molecular energies in the form of food (from good to bad), water and poisons, the latter varying all the way from mild agents of stupefaction to the most deadly drugs. Secondly, there is the pneumonic intake which varies from pure fresh air, sometimes dry, sometimes moist, sometimes low in pressure and sometimes high, to stagnant, foul, germ- and dust-laden air and even lethal gases.

Thirdly, we have the epidermal intake. This consists of energies from the electromagnetic series of which three are definitely known to be essential to life, namely the visible light series, the infra-red or heat wave series and the ultra-violet rays series. An excessive amount of or lack of any of these three is detrimental to life. Even in the same series different parts of the scale seem to have slightly values as in the case of the different colors of

of visible light. The same may be true of the two invisible series in respect to their different wave lengths. Then, too, light under special conditions, as when polarized, produces a different effect upon growing germs and seeds. Of the remaining groups of the electromagnetic series the x-ray series and the gamma ray series are known to be injurious to life save in negligible amounts. It seems safe to assume that the remaining groups of the Hertzian wave series and of the wireless wave series also have some effect on life. However, the last four series, the gamma and x-rays and the Hertzian and wireless waves, do not seem to be plentiful in Nature and may not be important in relation to life.

Now we come to the fourth group of factors which we may call the unknown intake. This includes all other forms of energy that may by any possibility find entrance into the body and thereby influence life. Electricity is very common in Nature in the form of earth currents and atmospheric currents. The constitution of living cells and of organisms in general is such that it is certain that these currents produce some effect in relation to life. Nearly 30 years ago S. Lemstrom found an electrical field promoted plant growth in some instances but not in others, as we might expect under the Principle of Selectivity. (See page 808 in the British Association Report for 1898.) About the only forms of energy remaining are cosmic rays, magnetism and gravitation. It has been suspected that cosmic rays may possibly stimulate life. The effect of the other two is not known. It is some of these unknown factors that may yet prove to be the key to the unsolved problems of evolution.

## V. Gravitation and Ice Ages

The cause of gravitation has been "disccvered" many times – one scholar of an international reputation writes me just recently that he has settled the question forever – so I'll not inflict the reader at this time with an exposition of my own "discovery" in that direction. It will suffice at this point to call

attention to one or two facts and then request the reader to make certain temporary assumptions. In the first place there is no generally accepted explanation of what gravitation is. Secondly, gravitation has been explained many times as due to pressure exercised by the bodies concerned upon each other. This explanation in one form or another is hundreds of years old and has had the support of many men of high distinction and great scholarship and even of men of genius. These two facts are undeniable and the reader is requested to assume in the discussion which follows that the explanation may be correct. It is of interest to note, momentarily, that such a view of gravitation, i. e. as due to pressure, would offer an explanation of the phenomenon of diakinesis in which phenomenon the chromosomes in germ cells have been observed under certain conditions to fly apart from each other. Likewise we would have gone a long ways towards explaining Lamarck's principle of ebranchement, Darwin's divergent evolution, Osborn's adaptive radiation, Deperet's "explosive" evolution, or similar expressions used to describe certain well-known phenomena.

Now let us jump from gravitation to the ice-ages. Of these there have been, according to the authorities, probably no less than five great ice-ages, beginning in earliest geological times and recurring at progressively shorter intervals until the last in which we are still living, according to Coleman and other scholars. The last ice-age has been divided into a succession of six glacial epochs with five intervening interglacial epochs and we are now living, according to Henry Allen, in the sixth interglacial epoch.

The important thing about ice-ages in general is that they are revolutionary periods in the Earth's history both in respect to important geological changes and in respect to the great evolutionary changes in the forms of life. For this reason it is necessary to understand something about the causes of ice-ages as well as conditions existing on the Earth at that time. No adequate cause has yet been agreed upon altho it has been suggested that ice-ages may be

due to a revolution of the Solar System in space. The fatal objection to this supposition is that the great ice-ages recur at progressively shorter intervals, but this objection would be eliminated if we were to assume that the primary cause of the ice-ages is due to the revolution of the Local Star System around the Galactic System and that at the same time the Local Star System moves nearer to the Galactic North Pole. To this assumption we may add that the revolution of the Solar System within the Local Star System would account for the alternation of glacial epochs and interglacial epochs within the last ice-age.

Now we are ready for the hook-up of ice-ages with our assumed explanation of gravitation. As the Solar System revolves thru its particular orbit in the Local Star System it suddenly enters into a high pressure zone. - I say "suddenly" advisedly because the Quantum Theory is assumed to apply to celestial spaces as well as elsewhere and the sudden flashing forth of nova or "new stars" is sufficient evidence at least of its possibility. - This high pressure zone causes a certain amount of compression within the Solar System, resulting in an increase of internal heat within its constituent parts. This increased heat, in the case of the Sun, causes a shift in the solar spectrum from the infra-red end to the ultra-violet end of the spectrum. This is in harmony with the unanimous conclusions of the astrophysicists that the bluish suns are the hottest and the reddish suns the coolest. This condition leads to the anomalous result that the hottest suns, giving off the shortest wave lengths, produce at a distance less heat due to the relative less amount of the longer wave lengths. -- It is truly amazing that solar observers have not before pointed out this logical result of a shift in the solar spectrum. Repeatedly attention has been called to the anomaly that the Earth received less heat from the Sun during sun-spot maximum when the Sun gave out more ultra-violet rays and was undoubtedly a hotter Sun, and yet observers have wondered why. And yet they knew that the radiant heat, which the Earth receives from the Sun,

depends at least partly upon the infra-red or heat waves and perhaps not at all upon the ultra-violet rays which have been christened "cold light." Moreover the Earth does not get its heat from the Sun on the same basis we get heat from a stove as every physicist knows. — So less heat is produced on the Earth by a hotter Sun and we have an ice-age, altho at the same time the Earth itself is also hotter inside.

It was intimated that the change would be sudden but the maximum pressure, however, may be for only a short period of time. If so, we may expect at the beginning of each glacial epoch a sudden invasion of the oceans in many parts of the world since the lithosphere is more compressible than the hydrosphere. There are two schools of geologists on this point: one calls attention to the widely spread evidence of marine deposits in Pleistocene formations now high above sea level, and the other school emphasizes the glacier-like character of the ice-age evidence. As so frequently happens, the truth may lie between. If there was an invasion of the oceans and then later a partial subsidence before the end of the epoch, both schools of geologists are accomodated. At the same time we have an explanation of that extraordinary Flood Saga that is scattered in various versions among the legends of primitive races from one end of the Earth to the other.

## VI.

## Conditions of Life in a Glacial Epoch

If we can reconstruct the conditions existing during a glacial epoch, we shall have solved to a large extent the cause of evolutionary changes. A part of this reconstruction is fairly simple. First let us consider the alimentary intake. Food will be scarcer. There will be no surplus and consequently no overfeeding. — And in all forms of life gross feeding means large size and poor differentiation as has been specifically observed in the case of

tadpoles. - It will be simple food and no fancy concoctions. Alcohol, tobacco, opium and all non-essentials will be omitted. There will be plenty of water but not much of anything else to drink.

As to the pneumonic intake, the air will be denser, due to increased gravitational pressure. It will be more moist since glaciation implies the presence of moisture in considerable amounts. Due to the action of the increased ultra-violet radiation in the atmosphere, there will be a greater amount of ozone in the air. There may also be a slightly greater amount of carbon dioxide in the air, due to there being less vegetation in the world to remove it. At present physicists claim that free hydrogen escapes from the Earth into outer space. On account of the increased gravitational pressure this may not happen to such a large degree in the glacial epoch with the result of a much larger percentage of hydrogen in the air. Finally, the air will be cooler and never - or seldom - stagnant as at present under certain conditions. There may be other variations.

In regards to the epidermal intake, the heat element, of course, will be less by an estimate of 5° to 10° C. on the average, according to the authorities. The visible light will be changed somewhat so that there will be a larger proportion of the shorter wave lengths. The third class of radiation to which the skin is sensitive, the ultra-violet rays, will be greatly increased but these rays will be tempered somewhat by an increased fogginess and cloudiness. Were it not for the latter conditions no blondes would have ever emerged from the last glacial epoch.

Finally there are the energies that may but are not conceded to affect life. Increased molecular activity, resulting from the greater gravitational pressure, would probably mean an increased flow of magnetism in the Earth's crust and, accompanying this increase of magnetism, there may be an increase of the negative electrical currents in the earth. The central fact of all, of course, is the increased gravitational pressure itself. And there is one other factor, - if my personal hypothesis of cosmic rays be correct, there will be a greatly increased number of

them bombarding the Earth from outer space.

It is so easy to omit factors of which our senses are nct directly aware. There is the Moon and its refracted or polarized light. – It is still fashionable to laugh at silly old farmers who think that moonlight affects growing seeds and causes meat to spoil but, according to laboratory experiments with polarized light, it does. – Due to a change in the Sun's light, including greater brightness and shorter wave lengths, there will be some change in the Moon's light, – a greater intensity possibly. And there will be other nocturnal lights for the Northern Lights or Aurora Polaris will be more powerful and more extended, and the Zodiacal Lights and Bands and the Gegenschein will glow with a luminosity so greatly increased that in visual effect outside the Solar System the Sun will appear a nova.

The extent of the Aurora Polaris during the glacial epoch may be conterminous with the glaciated area. This suggestion arises from the fact that the cathode rays of the Northern Lights bear a negative charge of electricity and a negative electrical potential is especially favorable for the deposition of rain and snow according to meteorological observations. This would offer a partial explanation of why Alaska and Siberia were not glaciated, except locally, during the last ice-age. Furthermore the ultra-violet rays would dissipate the negative potential on the Earth's surface for, as Sir Oliver Lodge has pointed out, these rays might have a similar effect on the Earth's surface as they do on a clean metallic surface with a negative potential. And the increased atmospheric pressure – and perhaps stronger air currents – will intensify this effect of the ultra-violet rays. So the glaciated Earth and its atmosphere will have much more negative electricity to influence life upon it.

We ought to be able to agree reasonably close as to the conditions affecting life within the glacial epochs. What we do not know and can not know is the exact amount of each factor to include in our synthesis of evolution. The ideal combination probably varies with different species, owing to the Principle of Selectivity. Most of these conditions can be

modified at will under laboratory conditions, the difficult points being, possibly, the the factors of gravitational pressure and of cosmic rays. The important thing is the new conception of a synthesis of all the conditions affecting life as a substitute for the old scheme of trying to trick Nature into revealing her secrets by controlling conditions in respect to a single factor. I've noticed the fondness of biological experimenters for "controlled uniform conditions," a situation practically never found in Nature. A better understanding of the Principle of Selectivity and of the Quantum Theory would greatly modify the usual laboratory practice.

## VII. A Board of Grand Strategy

Should we trust zoologists and their like to making investigations of living organisms? Take for example the fruit fly (**Drosophila**), the investigators have found that it makes many mutations even under normal conditions and these mutations are greatly increased (in the third generation) by a bombardment of the fly with x-rays. It is also observed that the mutations are of the nature of a loss and that the mutants die off after a few generations. The human race needs no information of that kind as we are already good at that sort of a thing ourselves. Our own mutations, of which there are some thirty dominant characters such as brachydactylism, a number of recessives such as albinism and a few sex-linked characters like color blindness, are also losses. Like the fruit fly we do not seem to be able to produce desirable mutations and desirable mutations is what we do want or else none at all.

What is needed is a Board of Grand Strategy to investigate the fruit fly. This Board should consist of a philosopher (president), a member of the Methodist Committee on Temperance and Morals (vice-president), a sociologist (secretary), a zoologist (chore boy), a botanist, a chemist, a biochemist, a physicist, a geophysicist, an astrophysicist, a geologist, a psychologist, a mathematician, an astronmer, a

geneticist, a cytologist and a few more. The philosopher, who is in charge of the investigation, first decides upon an objective: The fruit fly is to accomplish a racial improvment of itself for the lesson it teaches man on how to live. The next step is that our boss-investigator sends his second-in-command, the Methodist brother, to visit the **Drosophila melanogaster** in its native habitat. When he finds it in its dark, stagnant corner, indulging in its usual spree, one look and one sniff will be enough to convince our investigator as to the degeneracy and the atrocious living habits of that debased creature. The next step is the reform of the delinquent. In selected numbers it must be taught the value of pure food, of a balanced ration and of healthful living conditions. After a few generations of flies, living under continually imprcving conditions, we are ready to try out various new syntheses of the conditioning factors of life.

Having produced a few improved specimens, the Board of Grand Strategy should not stop with such few tho promising results for the human race has become very slow to learn. The **Drosophila melanogaster** must be evolved into a fierce cannibalistic **Dptera** that devours ordinary flies and mosquitos. To climax the lesson the creature should finally be taught, when its regular rations are scarce, to take a bite out of human beings, this in order to furnish a last convincing argument even to a member of the Tennessee legislature as it flies away with a piece of the legislator's epidermis. If the proposed Board of Grand Strategy follows faithfully the program I have outlined, I predict their efforts will be crowned with great success. And if the Tennessee legislators don't like their sore spots, – well, who cares – let them build a laboratory and develope a new breed of house sparrows that will keep the **Drosophila melanogaster strategonii** within reasonable limits.

## VIII. In Retrospect

Charging out of their dark evolutionary past we see

the first men, stained with blood, astride their half-wild horses; riding in disciplined ranks forth into the dawn of a new world. They are the lords of their environment - and they look it with their flashing eyes, their proud carriage and their dauntless air. As they carry their spoils into camp they are greeted with the happy shouts of their children and their women who never for a moment question the worth of the magnificent creatures before them. Joyous they are with life and energy, their intellect unclouded by a vicious heritage, their conduct untrammeled by outworn conventions of a dead and decadent past, conscious intuitively of great truths and values that the race has since forgotten, these are the men of the dawn, the finished product of Nature's workshop.

But today - sitting behind closed doors, we see one of their descendants. He is bald, toothless, bespectacled, big-bellied, double-chinned and apopletic. He has a bad stomach and a weak heart. His blood pressure was high at thirty and his energy low at twenty. He can scarcely walk for his corns and bunions, his broken arches and his creaking joints. Yet he is surrounded by "improvments." In front of him is a futurist painting that he calls art. At his elbow is a spluttering instrument that he calls a wonderful invention and over which he hears the latest concoctions of tin-pan alley that he calls music. A telephone rings, telling him that his drunken, degenerate son has killed a man while speeding. A messenger boy awaits him in the hall - his daughter informs him of her companionate marriage.

That is what civilization has made of Nature's masterpiece. And that creature it is that lives and dies in the fatuous belief that it is somehow or other superior to those primeveal men of the dawn. But Nature has marked him plainly for extinction. The final ignominy has already been put upon him for a huge ring has been placed in his nose to which his own obstreperous females have already attached their leading strings in preparation for taking him from the stage as the last curtain falls.

World-wide dominion has been man's but in that

respect he is only the last favored child of Nature. Nature is hard but just and those who misspend their heritage of supremacy she visits with world-wide extinction. Man's fate rests in his own hands – he has taken from Nature the possibility of effecting his improvment but he can never escape the inexorable tests that she will ever demand of her children. One by one the defunct civilizations have earned her epitaph of "failure" and even now she is writing ours. Can we stay her hand? Is it too late?

## AFTERWORD

I do not take my views of "Racial Old-Age" and of "Quanta of Evolution" too seriously. What's the use? If I am right then nearly everybody else in America must be wrong. And, if by any chance there should be a general acceptance in America of most of my views, that would prove that I must be mostly wrong. So why be serious? Anyway I think it would be rare sport if we could establish in America a correlation between the section of the country that produces the light-weights in avoirdupois and the heavy-weights in brains and ability. Now don't laugh because the Civil War Records showed among the recruits that the light-weights in poundage came from the vicinity of Boston harbor. – I believe there is an old Japanese saying to the effect that the big boys are stupid. – Or, again, it would be amusing to find out the correlation between divorces and the stigmata of racial old-age. It ought to be interesting to a lot of people to know why their marriage was a failure.

And there are such interesting geographical correlations. Those with a knowledge of Miss Ellen Semple's and Dr. Ellsworth Huntington's work on human geography would be fascinated with a monograph on the new digger Indian that must now be in process of development in certain parts of California. And how about a correlation between the Australian marsupials and the the Australian aborigines on the one hand and the record of white Australian immigrants in the United States in the matter of social inadequacy on the

other. To encourage further research let me add that I find the last correlation to be 100% perfect for Dr. Harry H. Laughlin of the Carnegie Institutions Eugenics Record Office has shown the Australian immigrants to be in first place with a record of 1000% for all classes of defects where 100% would be normal or average and a zero record would be the ideal.

I presume there are a few serious-minded persons who want my advice about weighty matters. I refer them first to Dr. Paul Kammerer who declared that the lesser evil was to marry young. I'll add, have all your babies before you are thirty, especially if you have the stigmata of age. Only the racially young can risk it later. In the second place listen to Prof. Henri Bergson who tells you not to aim at success too early in life. In other words if you are old don't specialize before 35; if middle-aged, not before 40; and if young, wait until 45; while if you happen to be of the type that Plato would have chosen for his philosopher-kings, NEVER SPECIALIZE, for the whole realm of human wisdom is yours.

* * * * * * *

BRIGHAM YOUNG UNIVERSITY
3 1197 21116 1549